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Fax: 724-643-8069April 15, 2003
L-03-067U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001**Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
1R15 Steam Generator Tube Plug Special Report**

In accordance with Beaver Valley Power Station (BVPS) Unit No. 1 Technical Specification 4.4.5.5.a which requires that a Steam Generator Special Report be submitted within 15 days of completion of steam generator inspections, the following is submitted for the examinations performed during the 1R15 refueling outage:

Eddy Current Examination

One hundred percent of the in-service tubes in Rows 3 through 46 from Steam Generators RC-E-1A, RC-E-1B and RC-E-1C were examined full length with bobbin coil probes. In-service tubes in Rows 1 and 2 were examined with bobbin coil probes to the upper most tube support plate in each leg. The U-bend regions of the tubes in Rows 1 and 2 were examined with Plus Point probes.

One hundred percent of the hot leg top-of-tubesheet region was examined in each steam generator with Plus Point probes. In addition, a twenty percent random sample of the cold leg top-of-tubesheet region was examined in RC-E-1A with Plus Point probes.

One hundred percent of the in-service tube sleeves installed at 1R13 were examined during 1R15. This examination included the sleeve welds, the unexpanded portion of the sleeves plus the lower hard roll area and expansion region of the tubesheet sleeves.

In response to recent issues at a plant with similar model steam generators, one hundred percent of the U-bend region in Rows 3 through 46 were examined with Plus Point probes. By default, this included one hundred percent Plus Point examination of the Anti-Vibration Bar (AVB) region.

Per the Technical Specification requirements for Alternate Repair Criteria (Generic Letter 95-05), all distorted tube support plate signals with bobbin coil voltages > 2.00 volts were

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further evaluated with 3 coil Plus Point probes. Those signals > 2.00 volts, that were confirmed (detected) with the Plus Point probes, were repaired by tube plugging. Distorted support plate signals ≤ 2.00 volts were randomly sampled with Plus Point probes to confirm the morphology being observed remained Outside Diameter Stress Corrosion Cracking (ODSCC).

The following additional examinations were also performed:

All dents with bobbin coil voltages ≥ 5.00 volts located at tube support plates were re-examined with Plus Point probes.

One hundred percent of tube support plate residual signals with amplitudes large enough to mask a 1.00 volt indication were re-examined with Plus Point probes in each steam generator. Confirmed residual signals ≥ 1.00 volt were removed from service.

Bulged Tubesheet Sleeve

One tube in RC-E-1B that was sleeved at 1R13 with full length tubesheet sleeve would not permit the passage of an eddy current probe during the 1R15 steam generator examination. This tube was removed from service by plugging. All other in-service sleeved tubes permitted passage of the appropriate eddy current probe and were successfully inspected by eddy current testing.

The cause for the collapsed sleeve phenomenon is understood. This degradation mechanism is known as the "flow diode" or the "Obrigheim" effect and has occurred in sleeved joints at several other sites. Through wall degradation of the parent tube can permit water to enter the crevice created between the parent tube and the sleeve. The water which enters the crevice while the plant is in a cold condition can become trapped when the plant heats up since the flow path created by the through wall degradation can close during hot conditions. The pressure created by the trapped water at hot conditions is sufficient to collapse the sleeve.

This condition has been evaluated for Beaver Valley Power Station Unit 1. The evaluation has recognized the potential for additional sleeves to collapse due to the flow diode effect and has concluded that the structural integrity of the sleeve weld and mechanical roll will not be jeopardized.

Axial Indications in Parent Tube Behind Tubesheet Sleeves

Twenty-eight tubes that were sleeved at 1R13 with full length tubesheet sleeves were found to have axial indications in the parent tube lower hard roll region. The parent tube indications are located approximately 1.0" up from the tube end and are coincident with the area where a tube plug was previously removed by the Tungsten Inert Gas (TIG) relaxation process. These tubes were removed from service.

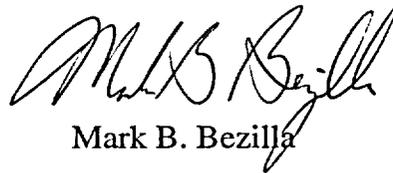
Summary of Tubes Removed from Service

Attachment 1 lists the number of tubes removed from service from each steam generator during 1R15.

The complete and detailed results of the steam generator tube inspection will be submitted within the next 12 months in accordance with BVPS No. 1 Technical Specification 4.4.5.5.b.

No regulatory commitments are contained in this submittal. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

Sincerely,



Mark B. Bezilla

Attachment

- c: Mr. T. G. Colburn, NRR Senior Project Manager
- Mr. D. M. Kern, NRC Sr. Resident Inspector
- Mr. H. J. Miller, NRC Region I Administrator

ATTACHMENT 1

Listed below is a summary of tubes removed from service for each steam generator:

Table 1

	RC-E-1A	RC-E-1B	RC-E-1C
Number of tubes removed from service Pre-1R15	662	448	428
Number of tubes removed from service during 1R15	99	84	35
Breakdown of tubes removed from service 1R15:			
Axial Indications Above the Hot Leg Top-of-Tubesheet	9	23	6
Circumferential Indications at Hot Leg Tubesheet Expansion Transition	2	1	0
Axial Indications Within the Hot Leg Tubesheet	9	4	10
Circumferential Indications Within the Hot Leg Tubesheet	4	1	0
Non Quantifiable Indications Above Top-of-Tubesheet	1	2	2
Volumetric Indications Above Top-of-Tubesheet	1	0	1
Tube Support Plate Indications > 2.00 Volts (Generic Letter 95-05)	8	6	5
Axial Indications at Dented Tube Support Plates	3	1	0
Volumetric Indications at Tube Support Plates	3	1	1
Confirmed Mix Residual Signals at Tube Support Plates \geq 1.00 Volt	42	22	4
Row 1 U-Bend Indications	1	0	0
Cold Leg Thinning	1	1	1
Free-Span Axial Indications in Row 3 and Greater (U-Bend Region)	0	0	2
Free-Span Volumetric Indications in Row 3 and Greater (U-Bend Region)	0	1	1
Free-Span Ding with Axial Indication	0	1	0
Anti-Vibration Bar Wear	1	0	0
Axial Indication at Anti-Vibration Bar Dent	1	0	0
Obstructed Tube	0	0	1
Axial Indications in Parent Tube Behind Tubesheet Sleeves	9	19	N/A
Restricted Hot Leg Tubesheet Sleeve	0	1	N/A
Permeability Variation	2	0	0
Secondary Side Anomaly	1	0	1
Preventatively Plugged	1	0	0
Number of tubes removed from service after 1R15	761	532	463